BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANPURA DIVISION

Name of Work: Package 6, includes 3 works of 100.00 Lakhs

1. Improvements to Drains and Asphalting roads at Ashwath nagar SLV Apartment road near HP Gas Godown in Ward No.06 (Thanisandra), Byatarayanapura Sub Division.
2. Asphalting to roads and Improvements to Drains at Hegdenagar Sai Hospital Road in Ward No.06 Byatarayanapura Sub Division.
3. Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.

FIRST & PART BILL

TEST REPORTS

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

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TEJUS

No. TC / BBMP / BYT-PMC / 599 / 20-21 Date:

To
The Executive Engineer
Byatarayanapura Division,
Bruhat Bangalore Mahanagara Palike,
Bangalore.

Dear Sir

Sub: **Package 6, includes 3 works of 100.00 Lakhs**

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **First RA bill** submitted by **M/S Benaka Developers and Projects Pvt.Ltd,** towards the above said work and arrived at an amount of **Rs. 37,03,506.00/-(Rupees Thirty Seven Lakh Three Thousand Five Hundred and Six Only**). The work has been completed satisfactorily.

This is for your kind information.

Thank you and assuring you the best of our Services at all the times

For Tejus Consultants
(Nischal M)

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TEJUS CONSULTANTS

GRADATION FOR GSB
(As per MORT&H 400-1,Grading-II)

Name of Work	:	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	21-08-2020
Type of Mix	:	GSB
Sample I/D	:	GSB1

Sample Location:	Slv appartment road	Date of Sampling:	20-08-2020	
		Date of testing:	21-08-2020	
Type of material & Purpose:	GSB	Oven Dry Wt.(gms):	10000.0	

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
75	0	0	0.00	100.00	-
53	0	0	0.00	100.00	100.00
26.5	2156	2156	21.56	78.44	70-100
9.5	2622	4778	47.78	52.22	50-80
4.75	1005	5783	57.83	42.17	40-65
2.36	1125	6908	69.08	30.92	30-50
0.425	1956	8864	88.64	11.36	10-15
0.075	830	9694	96.94	3.06	<5
Pan	306.0				
Total	10000.0				

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	Bruhat Bengaluru Mahanagara Palike		
Consultant	TEJUS CONSULTANTS,		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	WMM	**Date of Sampling**	21-08-2020
Sample Locati	Slv appartment road	**Date of Testing**	22-08-2020

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	366.00	368.00	351.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	269.00	270.00	258.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	97.00	98.00	93.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	26.50	26.63	26.50	
5	Average Aggregate impact value	(%)	26.54			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Authorised Signatory

ಸಹಾಯಕ ಎಂಜಿನಿಯರ್
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಎಂಜಿನಿಯರ್
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART I)

Project	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road, near Tejus Godown in Ward No.06(Thamsandra), Byatarayanapura Sub Division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	Slv appartment road	**Date of Sampling**	21-08-2020
		Date of Testing	22-08-2020

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	654	85	523	81
16.0	12.5	1152	114	1005	117
12.5	10.0	747	62	721	55
10.0	6.3	625	60	559	41
Total		**3178**	**321**	**2808**	**294**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.10
Elongation Index(%):	10.47
Combined FI+EL (%)	20.57

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TEJUS CONSULTANTS

Consultant's Representative

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra). Byatarayanapura Sub Division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	Slv apartment road	Date of Sampling:	21-08-2020
		Date of testing:	22-08-2020
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	358	358	3.58	96.42	95-100
22.4	2485	2843	28.43	71.57	60-80
11.2	2587	5430	54.30	45.70	40-60
4.75	1457.0	6887	68.87	31.13	25-40
2.36	885.0	7772	77.72	22.28	15-30
0.6	821.0	8593	85.93	14.07	8.0-22.0
0.075	941.0	9534	95.34	4.66	0-8
Pan	616.0	10150			
Total	10150.0				

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TEJUS CONSULTANTS

Consultants Representative

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Project	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28))

Date of Testing	23-08-2020		
Layer no. or level	GSB layer		
Depth of hole	200mm		
Field density:	**1**	**2**	**2**
Chainage	**Slv appartment road ch 28**	**Slv appartment road ch 69**	**Slv appartment road ch154**
Wt. of wet material from hole (Ww) gms.	5980	5986	5994
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10582	10576	10572
Wt. of sand in hole+ cone (w3) gms.	4418	4424	4428
Wt. of cone gms.	1080	1080	1080
Wt. of sand gms.	3338	3344	3348
Bulk density of sand (ys)gm/cc	1.32	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.36	2.36
Moisture meter reading(moisture content)	6.50	6.40	6.40
Result			
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.22	2.22	2.22
MDD	2.25	2.25	2.25
OMC	6.30%	6.30%	6.30%
% compaction obtained	98.69	98.70	98.71
% compaction required	98%	98%	98%

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Project	Improvements to Road and Asphalting roads at Ashwath nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**24-08-2020**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Chainage	**Slv appartment road)'@Ch:86**	**Slv appartment road)'@Ch:152**
Wt. of wet material from hole (Ww) gms.	5988	5988
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10595	10598
Wt. of sand in hole+ cone (w3) gms.	4405	4402
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3325	3322
Bulk density of sand (γs)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.38	2.38
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.24
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.42	98.70
% compaction required	98%	98%

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Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
Project	Improvement to Drains and Asphalting to Road at SVN School Road Krishnappa House to Venkatesh House Road in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Client	BRUHAT BANGALORE MAHANAGARA PALIKE	
Consultant	M/s Tejus Consultants	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Date of Testing	24-08-2020	
Layer no. or level	WMM I layer	
Depth of hole	230mm	
Field density:	**1**	**2**
Chainage	**1st c/s Road (SLV)'@Ch:22**	**1st c/s Road (SLV)'@Ch:30**
Wt. of wet material from hole (Ww) gms.	5982	6158
Wt. of sand+cylinder before pouring (w1) gms.	14000	14000
Wt. of sand+cylinder after pouring (w2) gms.	9855	9712
Wt. of sand in cone (w3) gms.	826	841
Wt. of sand in hole (w4)=(w1-w2-w3) gms.	3319	3447
Bulk density of sand (γs)gm/cc	1.31	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.36	2.36
Moisture meter reading(moisture content)	12.45	12.56
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.10	2.10
MDD	2.13	2.13
OMC	12.60%	12.60%
% of Compaction Obtained	98.58	98.36
Compaction Required	98%	98%

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	Tejus Consultants, Bangalore		
Contractor	M/S Benaka Developers and Projects Pvt Ltd		
Proposed Use	BC	**Date of Sampling**	29.06.2021
Sample Location	At plant	**Date of Testing**	29.06.2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	378.00	365.00	351.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	285.00	275.00	265.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	93.00	90.00	86.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.60	24.66	24.50	
5	Average Aggregate impact value	(%)	24.59			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor:	M/S Benaka Developers and Projects Pvt Ltd

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	29.06.2021
		Date of Testing	29.06.2021

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	812	75	926	73
16.0	12.5	1345	130	1236	115
12.5	10.0	518	65	440	54
10.0	6.3	455	55	430	65
Total		**3130**	**325**	**3032**	**307**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.38
Elongation Index(%):	10.13
Combined FI+EL (%)	20.51

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	01-07-2021
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	966	921
2. Weight of Mixture after extraction, g	915	873
3. Weight of Bitumen	51	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	50.00
8. Bitumen content in %	5.45	5.43
9. Average Bitumen content in %	**5.44**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	1st and 2nd c/s Rd(SLV Apartment)	Date of Sampling:	01-07-2021
Type of material & Purpose:	BC	Date of testing:	01-07-2021
		Oven Dry Wt.(gms):	915.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	78	78.0	8.52	91.48	79 - 100
9.50	108	186.0	20.33	79.67	71 - 95
4.75	136	322.0	35.19	64.81	53 - 71
2.360	120	442.0	48.31	51.69	42 - 58
1.180	106	548.0	59.89	40.11	34 - 48
0.600	78	626.0	68.42	31.58	26 - 38
0.300	83	709.0	77.49	22.51	18 - 28
0.150	68	777.0	84.92	15.08	12 - 20
0.075	72	849.0	92.79	7.21	4 - 10
Pan	66.0				
Total	915.0				

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TEJUS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	1.07.2021
Type of Mix :	Tack coat
Sample I/D :	1
Location	Slv appartment road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@32**	**@98**	**@149**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.788	0.772	0.791
Final weight of plate after application of tack Coat (c)	Kg	0.811	0.795	0.814
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Road and Asphalting roads at Ashwarth nagar SLV Apartment road near HP Gas Godown in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants, Bangalore
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	1.07.2021
Type of Mix :	Tack coat
Sample I/D :	2
Location	1st and 2nd c/s Rd (Slv apartment)

Determination	**Unit**	**Test No**		
		1	2	3
Location	**Chainage**	**@05**	**@19**	**@25(2nd c/s)**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.802	0.764	0.815
Final weight of plate after application of tack Coat (c)	Kg	0.825	0.787	0.838
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	PCC
Location/Source	new shanthi sagar cross roads	Date of Sampling	14.05.2021
Period of Soaking	24 hours	Date of Testing	15.05.2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	666	648	651	
B	Weight of oven - dry sample gm.	658	640	643	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1693	1682	1684	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.653	2.656	2.657	**2.655**
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.216	1.250	1.244	**1.237**

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TEJUS

Test Report on Cement

Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	15.05.2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	106 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	542 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	25 % to 35

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	Proposed Use	PCC
Sample Location	new shanthi sagar cross road	Date of Sampling	15-05-2021
		Date of Testing	15.05.2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	224	224	7.47	92.53	90 - 100
2.36 mm	318	542	18.07	81.93	75 - 100
1.18 mm	425	967	32.23	67.77	55 - 90
0.600 mm	470	1437	47.90	52.10	35 -59
0.300 mm	754	2191	73.03	26.97	8-30
0.150 mm	655	2846	94.87	5.13	0 - 10
Pan	154	3000			-

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	new shanthi sagar cross road	**Date of Sampling**	14.05.2021
		Date of Testing	15.05.2021

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	86	86	2.87	97.13	95-100
20.00mm	1402	1488	49.60	50.40	30-70
10.00mm	966	2454	81.80	18.20	10-35
4.75mm	436	2890	96.33	3.67	0-5
Pan	110	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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Test Report on Compressive strength of Solid Block

Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Cross sectional area	80000mm2
Size of cube	(400x150x200) mm
No. of Block Tested	1
Reference IS code:	IS:2185 (Part 1)- 2005

Sl.No.	Date of Sampling	Date of testing	Area of Cube	Failure load	Compressive strength	Obtained Average compressive strength	Minimum Required compressive strength of individual units
			mm^2	KN	N/mm^2	N/mm^2	N/mm^2
1	21-05-2021	22-05-2021	80000	384.00	4.80	4.66	4.00
2	21-05-2021	22-05-2021	80000	375.00	4.69		
3	21-05-2021	22-05-2021	80000	360.00	4.50		

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Test Report on Compressive strength of Solid Block

Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Cross sectional area	80000mm2
Size of cube	(400x150x200) mm
No. of Block Tested	2
Reference IS code:	IS:2185 (Part 1)- 2005

Sl.No.	Date of Sampling	Date of testing	Area of Cube	Failure load	Compressive strength	Obtained Average compressive strength	Minimum Required compressive strength of individual units
			mm^2	KN	N/mm^2	N/mm^2	N/mm^2
1	22-05-2021	23-05-2021	80000	395.00	4.94	4.83	4.00
2	22-05-2021	23-05-2021	80000	388.00	4.85		
3	22-05-2021	23-05-2021	80000	376.00	4.70		

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Test Report on Cement

Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers & Project Pvt.Ltd.
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	27-05-2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	106 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	384 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	4mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	29.00%	25 % to 35

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	concrete
Location/Source	new shanthi sagar cross road	Date of Sampling	26.05.2021
Period of Soaking	24 hours	Date of Testing	27.05.2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	648	650	658	
B	Weight of oven - dry sample gm.	640	642	648	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1682	1683	1690	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.656	2.653	2.667	2.658
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.250	1.246	1.543	1.346

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka Developers & Project Pvt.Ltd.

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	**Proposed Use**	Coping concrete
Sample Location	new shanthi sagar cross road	**Date of Sampling**	27.05.2021
		Date of Testing	27.05.2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	224	224	7.47	92.53	90 - 100
2.36 mm	312	536	17.87	82.13	75 - 100
1.18 mm	422	958	31.93	68.07	55 - 90
0.600 mm	492	1450	48.33	51.67	35 -59
0.300 mm	714	2164	72.13	27.87	8-30
0.150 mm	646	2810	93.67	6.33	0 - 10
Pan	190	3000			-

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete	
Sample Location	new shanthi sagar cross road	**Date of Sampling**	26-05-2021	
		Date of Testing	27-05-2021	

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	268	268	2.68	97.32	95 - 100
10.00 mm	4838	5106	51.06	48.94	25 - 55
4.75 mm	4222	9328	93.28	6.72	0 - 10
Pan	672	10000			

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.	
Consultants	TEJUS CONSULTANTS	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	12.5 mm down size	Proposed Use	CONCRETE	
Sample Location	new shanthi sagar cross road	Date of Sampling	26-05-2021	
		Date of Testing	27-05-2021	

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	506	506	5.06	94.94	90-100
10.0	4596	5102	51.02	48.98	40-85
4.75	4432	9534	95.34	4.66	0-10
Pan	466	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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PRECAST SLAB (CORE) TEST REPORT

TEJUS CONSULTANTS

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Name of Work	:	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	02-06-2021
Technical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M20, 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	90.00	0.426	2410.67	1.80	0.960	39.66	20.20	21.81	20.94	26.18
2	50.00	90.00	0.465	2631.36	1.80	0.960	39.54	20.14	21.75	20.88	26.10
3	50.00	90.00	0.459	2597.41	1.80	0.960	39.72	20.23	21.85	20.97	26.22

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PRECAST SLAB (CORE) TEST REPORT

Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Name of Work	:	Improvements to Roads and Drains at Hegadenagar Eastern side 1st cross road to 8th cross road in Ward No.06 Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	02-06-2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M20 .250mm Thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (KN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	100.00	180.00	3.364	2379.54	1.80	0.960	162.00	20.63	22.28	21.39	26.73
2	100.00	180.00	3.345	2366.10	1.80	0.960	160.00	20.37	22.00	21.12	26.40
3	100.00	180.00	3.367	2381.67	1.80	0.960	159.00	20.24	21.86	20.99	26.24

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